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FISHERY MARKET NEWS



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FISHERY MARKET NEWS

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FISHERY MARKET NEWS

A REVIEW OF CONDITIONS AND TRENDS OF THE COMMERCIAL FISHERIES

October 1941

Washington, D. C.

Vol. 3, No. 10

SUMMARY

Special Articles

Sources and Seasons of Fresh Fishery Products Received at Chicago, 1940.—Thirty-four of the 48 States, Alaska, and 8 Canadian Provinces supplied the Chicago Wholesale Market with 59,433,000 pounds of fresh and frozen fishery products in 1940. Fresh-water varieties accounted for 31,745,000 pounds of the total. Receipts of salt-water species totaled 16,200,000 pounds while shellfish and miscellaneous items accounted for the remaining 11,488,000 pounds.

Have You Overlooked Fish?—Nutritional investigations of fish, other than its liver oils have been meager, yet available information indicates that no other product except milk has a broader claim for attention by nutritionists and home economists.

Fresh Fish

Retail food prices for the moderate income family rose 2.6 percent between mid-August and mid-September. Since March of the current year when the rapid rise in food prices began there has been an increase of 12.6 percent.

August landings of fishery products at Boston, Gloucester, and Portland increased 2 percent in volume and 39 percent in value as compared with the same month last year.

The largest recorded catch of Columbia River salmon for any month occurred during September when over 8 million pounds of chinook salmon were taken during the period from September 10 to 20.

Frozen Fish

Holdings of frozen fish and shellfish in the United States and Alaska cold-storage plants totaling 102,163,000 pounds on September 15 were the largest in history. During the month ending September 15, 1941, a total of 28,710,000 pounds of fishery products were frozen by domestic freezers—an increase of 21 percent as compared with the same month last year.

Canadian cold-storage plants held 33,090,000 pounds of frozen fresh fishery products on September 15—an increase of 8 percent as compared with the holdings on the same date in 1940. Canadian freezers froze 10,785,000 pounds of fresh fish during August.

Canned Fish Trade

Unsold stocks of canned salmon in the hands of packers on September 30 totaled 1,470,033 standard cases as compared with 1,624,243 cases on the same date in 1940.

The Alaska pack of canned salmon to September 27 totaled 6,831,310 standard cases, the largest pack since 1936 when 8,274,429 cases were canned to the corresponding date.

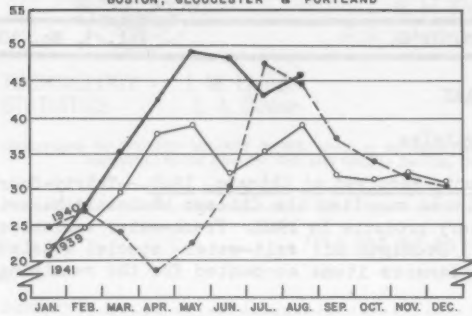
Available data on the production of other important canned fishery products indicate that the packs of shrimp, tuna, and mackerel are considerably behind those of last year. However, an unusually heavy pack of sardines was canned in California during the first two months of the current season (August and September) and data on the supply of herring available for canning Maine sardines indicate that the pack of sardines in this State will be among the largest in history.

Foreign Fishery Trade

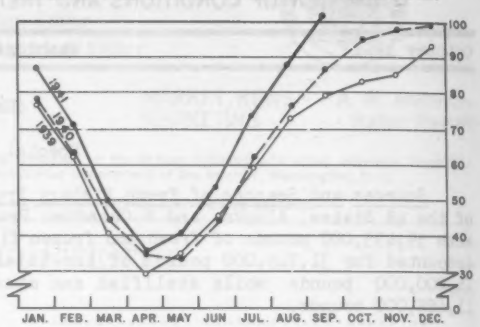
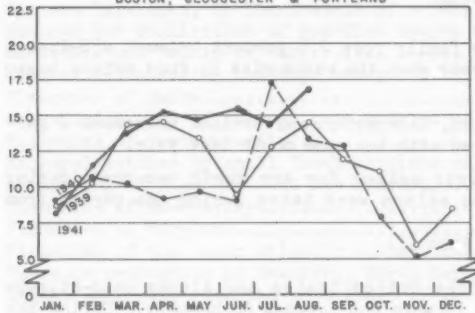
A total of 7,773,000 pounds of edible fishery products were exported from the United States during August while imports totaled 28,193,000 pounds. During the first 8 months of the current year exports of edible fishery products declined 18 percent while imports increased 3 percent as compared with the same period last year.

TRENDS OF FISHERY TRADE

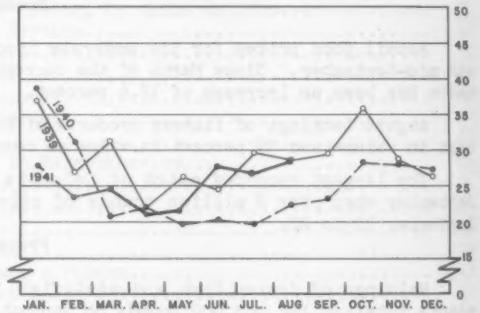
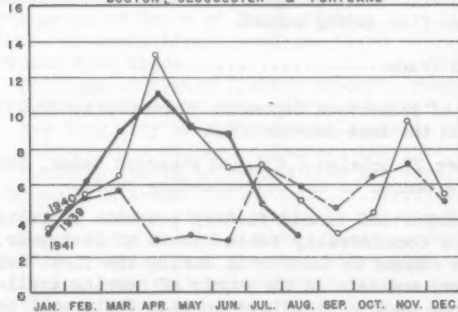
In millions of pounds

VESSEL LANDINGS, ALL FRESH FISH
BOSTON, GLOUCESTER & PORTLAND

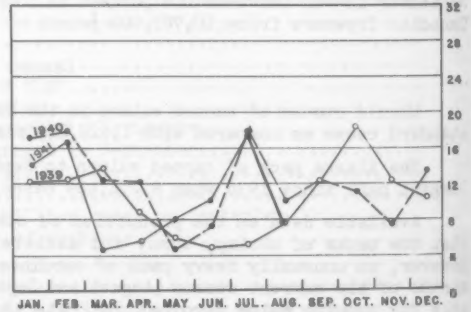
DOMESTIC COLD-STORAGE HOLDINGS OF FROZEN FISH

VESSEL LANDINGS, FRESH HADDOCK
BOSTON, GLOUCESTER & PORTLAND

IMPORTS OF EDIBLE FISHERY COMMODITIES

VESSEL LANDINGS, FRESH COD
BOSTON, GLOUCESTER & PORTLAND

EXPORTS OF EDIBLE FISHERY COMMODITIES



SOURCES AND SEASONS OF FRESH FISHERY PRODUCTS RECEIVED AT CHICAGO, 1940

By

E. C. Hinsdale
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Chicago, Illinois
Fish and Wildlife Service

The Chicago Wholesale Market is somewhat of a cosmopolitan affair insofar as the North American sources of its supply of fish and shellfish are concerned. In all, 34 States, Alaska, and eight Canadian Provinces supply its needs with 101 items of fresh and frozen fishery products. Of this total, fresh products are represented by 29 fresh-water, 29 salt-water and 16 shellfish and miscellaneous classifications. The remaining 27 items consist of frozen fishery products. They are not included in the tabulations on the following pages because frozen stocks of many of the listed species are usually obtainable from wholesalers or are stored in local cold-storage warehouses throughout the year. *

During 1940 the Chicago Wholesale Market received 59,433,000 pounds of fresh and frozen fishery products. Of this total 75 percent arrived fresh and 25 percent frozen. Fresh-water varieties totaled 31,745,000 pounds, 90 percent fresh and 10 percent frozen. The frozen poundage was mostly sauger, whitefish, lake trout, smelt and tullibee. Salt-water fish amounted to 16,200,000 pounds of which 37 percent was fresh and 63 percent frozen. Halibut, salmon, and rosefish, cod, haddock and pollock fillets formed the bulk of the frozen volume. Shellfish and miscellaneous items totaled 11,488,000 pounds, 87 percent fresh and 13 percent frozen, the latter almost exclusively shrimp and spiny lobster tails.

The table covers the more important fresh products and includes all the sources from which more than negligible quantities were received. In the table the months are represented by the figures 1 to 12; thus, 1-3 means January, February and March; 10-4 indicates October to April, inclusive; while 5,7 means May and July only. The receiving periods shown indicate to some extent the shipping or producing seasons in the various States and Provinces listed. This does not always mean, however, that certain varieties are not obtainable in the producing areas when they are not listed as available in Chicago from those sources. Many factors contribute to this, particularly more abundant supplies from nearer areas, competition with increased supplies of other varieties, and lack of continued demand.

Of the fresh-water varieties listed, 15 are available the year round, and most of the remainder are received during 8 or more months. As might be expected, the latter are available in considerably smaller quantities. In general, domestic supplies are available in more months than are imported. Over 90 percent of the fresh sauger and ciscoes were imported in 1940 and 87 percent of the eels. Considerable quantities of lake trout, whitefish, yellow perch and yellow pike also were imported although the greatest supply was of domestic origin. Nearby States such as Wisconsin, Michigan, Minnesota, and Illinois were prolific sources of fresh-water fish, both in variety and volume. Of the Canadian Provinces, Ontario provided the most species and Manitoba the greatest quantity.

Shorter seasons, more distant producing areas, and greater transportation costs undoubtedly contributed to the fact that only 10 salt-water varieties were received fresh in every month of the year. With a few exceptions, the remainder—species such as salmon, halibut, shad, and mackerel—were available only during their seasons of greatest abundance. Imported supplies of fresh salt-water fish were not of importance from Canada except for shipments of halibut and salmon, and, in these instances, the bulk of the volume had been taken by United States fishing vessels and was shipped through Canada in bond. Massachusetts furnished most of the domestic salt-water fish and British Columbia most of the imported, including that shipped in bond.

Seven fresh shellfish species were available all 12 months of the year, the most important being shrimp, lobsters, scallops, and hard clams. With the exception of lobsters and lobster meat from New Brunswick, all varieties were from domestic sources—mainly Louisiana, New York, Virginia, and Massachusetts.

*Detailed data on receipts of frozen fishery products are available in the annual summary, "Receipts of Fresh and Frozen Fishery Products at Chicago, 1940", released by the local office, and "Relative Seasonal Supplies of Fishery Products at Chicago, 1939", in the October 1940 issue of Fishery Market News.

Receipts of Fresh Fish on the Chicago Wholesale Market, 1940: By Sources of Supply and Seasons

Receipts of fish on and Chicago wholesale market, 1940, by sources of supply and season															
Fresh-water fish	Receipts in 1940 Lbs.	All	De- mers- tic	Im- port- ed	Ala. Fla. Ill. Ind. Iowa Mass. Mich. Minn. Mo. N.Y. N.C. N.D. Ohio Penn. Wis.	Al- Mani- ber- toba	On- Que- tar- io bec	Sas- katch- ewan							
Blue pike .	269,422	4-12	4-11	10-12	-	-	4-11 6	-	-	4-11	5-6	-	-	10-12	-
Buffalofish	963,187	1-12	1-12	3-11	-	•	4-11 9-7	•	-	-	-	1-12	-	3-11	-
Bullheads .	229,586	1-12	1-12	9-6	-	11-7	•	1-12	-	•	8-9	•	1-11	4-6 9-11	-
Carp. . . .	1,834,437	1-12	1-12	4	-	-	1-12 2-4	1-12	-	-	4-7 10-12	-	1-12	4	-
Catfish . .	365,550	1-12	1-12	5-10	4	1-12	1-10	•	1-12	-	1-12	-	4-11	•	5-10
Cnabs . . .	903,000	1-12	1-12	3-5-7, 10	-	-	1-12 5-3	-	-	-	-	-	1-12	3-5-7 10	-
Cisco . . .	63,817	5-7 10-12	10-12	10-12	-	-	10-12	-	-	-	12	-	-	5-7 10-12	-
Croppie . .	23,493	8-5	8-4	4-5 9-11	-	11-4	•	-	-	-	-	-	-	4-5 9-11	-
Eels. . . .	124,197	3-12	12, 3-10	5-12	-	7-10	3-10	-	•	12	•	-	-	5-12 7-12	-
Lake herring	3,528,284	1-12	1-12	4-7, 10-12	-	-	11-5 6-7	-	-	-	-	-	1-12	4 10-12	-
Lake trout.	5,711,472	1-12	1-12	1-12	-	-	1-12 3-1	-	-	-	-	•	1-12 2-4 7-9	6 11, 12	-
Menominee .	29,137	3-1	3-1	9-11	-	-	•	-	-	-	-	-	3-12	8 9-11	-
Pickarel. .	435,071	1-12	1-12	1-12	-	-	-	1-12	-	-	-	•	1-12 1-6	1-11	2
(Jacks) . .															
Rock bass .	12,389	4-1	4-1	1-4 9-11	-	-	-	-	-	-	-	-	•	1-4 7-9 11	-
Sauger. . .	1,958,223	1-12	1-12	1-12	-	-	-	-	-	-	4-7 10-11	-	8	1 6-4	-
Sheepshead.	1,000,357	1-12	1-12	5-6, 10, 11	-	-	2-12	-	1-12	-	4-11	7	1-12	5-6 10, 11	-
Smelt . . .	1,767,493	1-12	1-12	-	-	-	•	•	-	-	-	-	1-12	-	-
Suckers . .	1,055,738	1-12	1-12	11-9	-	-	3-12	-	4-11	-	4-7 10-12	-	1-12	6-8 12-3	-
Tullibee. .	134,122	3-1	6-1	1-3 6-12	-	-	-	-	-	-	-	-	10	3-12 6	-
White bass.	66,997	4-11	4-11	10, 11	-	-	-	-	-	-	5-11	4-11	-	4-6 10, 11	-
Whitefish .	3,323,750	1-12	1-12	1-12	-	-	-	-	-	-	3-5 4-5 12-4	-	1-12	1-12	1
Yellow perch	2,929,097	1-12	1-12	1-12	-	-	1-12	•	-	-	4-1 4-1 1-12 1-3	-	1-12	1-12	-
Yellow pike	1,791,973	1-12	1-12	1-12	-	-	-	-	-	-	4-12	•	1-12 1-3 6-4	2-12	1

NOTE.—Receipts of small quantities during one or more months of the year are designated by an asterisk (*). In addition to the states listed above, Maryland shipped small quantities of buffalofish, bullheads and catfish; Texas a small amount of buffalofish; and Maine a small quantity of smelt.

Receipts of Fresh Fish on the Chicago Wholesale Market, 1940: By Sources of Supply and Seasons (Continued)										
Salt-water fish	Receipts in 1940	All	Domestic	Ala.	Cal.	Fla.	Maine	Mass.	N.J.	N.Y.
	Lbs.									
Butterfish. . .	37,080	2-12	2-12	-	-	-	-	-	-	-
Od.	107,309	1-12	1-12	2-12	-	-	-	-	-	-
Croaker. . . .	53,440	2-12	2-12	-	-	-	-	-	-	-
Flounders. . .	190,906	1-12	1-12	1-4	-	-	-	-	-	-
Haddock. . . .	114,780	1-12	1-12	2	-	-	-	-	-	-
Halibut. . . .	3,449,811	4-10	4-10	4-10	-	-	-	-	-	-
Herring, sea. .	62,626	6-2	6-2	10-12	-	-	-	-	-	-
(Sardines)	13,944	2-12	2-12	4-12	-	-	-	-	-	-
(Mackerel)	278,131	1-12	1-12	-	-	-	-	-	-	-
Pompano. . . .	35,976	1-12	1-12	-	-	-	-	-	-	-
Salmon	8,800	8-10	8-10	9	-	-	-	-	-	-
Chum (Fall). .	243,459	4-10	4-10	4-8, 10	-	-	-	-	-	-
King (Chinook)	17,500	7-9	-	7-9	-	-	-	-	-	-
Pink (Humpback)	353,743	5-11	6-11	5-10	-	-	-	-	-	-
Silver.	78,567	1-12	1-12	-	-	-	-	-	-	-
Scup (Foray). .	83,651	1-12	1-12	-	-	-	-	-	-	-
Sea bass. . . .	30,819	3-6	3-6	-	-	-	-	-	-	-
Shad.	215,483	1-12	1-12	-	-	-	-	-	-	-
Snapper, red. .	33,568	1-12	1-12	-	-	-	-	-	-	-
Sole 3/.	10,100	10-5	10-5	-	-	-	-	-	-	-
Spanish mackerel	319,906	1-12	1-12	-	-	-	-	-	-	-
Whiting. . . .	33,840	8-1, 3, 5	8-1, 3, 5	-	-	-	-	-	-	-
Wolffish. . . .										

NOTE.—Receipts of small quantities during one or more months of the year are designated by an asterisk (*). Less than 10,000 pounds of bluefish were received from Florida and New York; mullet from Florida and tuna from Massachusetts.

1/ Includes catch taken by U. S. vessels and shipped through Canada to the United States in bond.

2/ Consists of catch taken by U. S. vessels and shipped through Canada to the United States in bond.

3/ Includes gray sole, lemon sole and sole fillets.

Receipts of Fresh Fish on the Chicago Wholesale Market, 1940: By Sources of Supply and Seasons (Continued)

Shellfish and Miscellaneous	Receipts in 1940 Lbs.	All mes- port- tic	Do- im- port- ed	Ala.	Conn.	Fla.	La.	Maine	Mass.	Mich.	N.J.	N.Y.	N.C.	Ore.	Tex.	Va.	Wash.	Wis.	New Brun- swick	Nova Scotia
Bullfrogs. . .	3,321	6-9	6-9	-	-	-	6-9	-	-	-	-	-	-	-	-	-	-	-	-	-
Crabs:																				
Hard.	265,436	1-12	1-12	-	-	-	6	-	5-3	-	-	1-12	-	-	-	1-12	-	-	-	-
Soft.	6,652	9-7	9-7	-	-	-	-	-	9-7	-	-	-	-	-	-	-	-	-	-	-
Crabs:																				
Hard.	16,263	1-12	1-12	-	-	-	7-11	-	-	-	-	-	-	1-6	-	-	5-3	-	-	-
Soft.	43,034	3-11	3-11	-	-	-	4-11	-	3-11	-	-	-	4-6	-	-	-	-	-	-	-
Crab meat. . .	100,322	1-12	1-12	-	-	-	1-12	-	-	-	-	-	-	-	-	1-12	-	-	-	-
Frog legs. . .	44,385	1-12	1-12	-	-	1-12	4-11	-	-	-	-	3-6,9	-	-	-	-	-	-	-	-
Lobsters. . .	380,983	1-12	1-12	1-12	-	-	1-12	-	1-12	-	-	-	-	-	-	-	-	-	1-12	9,10
Lobster meat. .	1,908	1-3, 5,9	1,3	5,9	-	-	-	-	-	-	-	1,3	-	-	-	-	-	-	5,9	-
Oysters, shell	898,254	8-5	8-5	-	11	9,11	2	-	9-4	-	8-11	8-5	-	-	-	2-8,12	-	-	-	-
Oysters, shucked	1,231,697	9-4	9-4	-	-	9-4	-	-	10-4	-	-	9-4	9-4	-	-	9-4	-	-	-	-
Scallops, sea	380,661	1-12	1-12	-	-	-	-	12-10	1-12	-	-	12-9	-	-	-	-	-	-	-	-
Shrimp.	6,512,962	1-12	1-12	-	9-12	-	1-12	-	-	-	1-3,6,9,10	-	8	-	3-12	-	-	-	-	-
Turtle meat. .	6,506	1-9, 11	1-9, 11	-	-	-	5-9	4	-	-	3-6	-	-	-	-	-	-	1-5, 8,9,11	-	-

NOTE.—Receipts of small quantities during one or more months of the year are designated by an asterisk (*). In addition to the states listed above, California shipped small quantities of hard crabs, crab meat and shrimp; Georgia crab meat; Michigan frog legs; and Rhode Island and Delaware shucked oysters.

HAVE YOU OVERLOOKED FISH? *

By

Gerald A. Fitzgerald and B. E. Nettleton

General Foods Corporation, New York City

At this time when an "all out" effort is being made by our government to fortify the health of our nation as a most necessary defense measure, it is opportune to inquire into dietary fields to which but little attention has been given. Fish certainly belongs to that class of food which has, nutritionally speaking, received only minor consideration. The "ballyhoo" for milk, cereals, fruits, vegetables, eggs, and meat—yes, even nuts and soybeans, is well known. But what has the public been told of fish? Yet, other than milk no product has a broader claim for attention by nutritionists and home economists.

The above may be news to many who read this article. Nutritional investigation of fish, other than of its liver oils, has been meager. Nevertheless, the implications of the information now available certainly exhort nutritionists to more intensive research efforts. This article, therefore, will not attempt to cover many fish products but only some of those for which broader information exists. Shellfish and crustacea are not covered but the little data available indicate they are remarkable sources of all the vitamins and minerals, barring none, and really deserve a special article at a time when they can receive the justice due them. Suddenly we realize that cod, haddock, and halibut live 100 to 600 feet below the surface of the ocean where no green life exists and wonder how their vitamin value is obtained. As shellfish constitute their chief dietary, they must be responsible for the high vitamin potency of these bottom feeding fish. Perhaps this truth has remained hidden during 25 years of intensive research on fish liver oils in every country on earth, due to lack of knowledge in such quarters of the biology of the ocean. Here is a story that certainly seems worth saving until the whole truth is known.

Is Fish a Protective Food?

When E. V. McCollum coined the term "protective foods," he included only milk and green leafy vegetables because at that time, nutritionists thought solely in terms of calcium and vitamin A. Since then practically every food except fish has been proposed for inclusion under this now much broadened label. Since meats are now included largely because of their richness in the vitamin B complex and in copper, specific for blood-making capacity, possibly it will serve the reader better hereinafter to compare fish with meat.

Both fish and meat have as high a vitamin B₁ content as white or rye bread. With the exception of peas and chard, fish is equivalent or superior to any fruit or vegetable in vitamin B₁. This is also true in the case of vitamin B₂(G), except in the case of about three additional leafy vegetables. No fruit or vegetable contains vitamin D; yet salmon, herring, and probably mackerel contain two or three times as much vitamin D as eggs which, in turn, are about ten times as rich in this vitamin as any other natural terrestrial product. Milk is highly touted for its calcium content, yet fish is higher in calcium than human milk although containing less than half the calcium of cow's milk. Fruits and vegetables may excel in vitamin A and C, but do not forget that cod-liver oil is still our best source of vitamin A. And how many of us realize that scallops contain as much vitamin C as carrots, squash or blackberries?

In the case of copper, fish bows only to meat and only to egg yolk among fresh products for available iron. A few berries have slightly higher amounts of iron but it is not known whether such iron has the remarkably high availability of that of fish.

Fish is Rich in Minerals

Iodine:

It is common knowledge that fish is our chief source of iodine among natural foods. In localities where water supplies may lack this mineral, the eating of salt-water fish is about the only natural means of preventing widespread endemic goitre. But this is by far not the only mineral in which fish excels.

* Reprinted from Hospital Management, August 1941.

Iron:

A daily intake of iron of 7.0, 10.0 and 15.0 milligrams, respectively, for infants, children and adults is required. Based on the now widely recognized ionizable iron content or available iron as denoted in Table I, it is seen that, depending upon selection, it would require from 3 3/4 to 5 1/2 pounds of meat and only 1 1/4 to 4 3/4 pounds of fish to supply our adult iron requirement for a day. Eggs and liver are the only two natural products that are superior in iron content to fish and meat on the served-fresh basis. Thus, fish must be considered a major source of dietary iron.

Copper:

Of fresh foods, only poultry ranks higher than fish, according to Sherman, as a source of copper. This excludes the fact, however, that oysters and certain other shellfish and liver may contain several times as much copper as poultry. The importance of copper in the diet has recently gained recognition through the effort of the Wisconsin group of nutritionists who have shown it to be more specific as a blood-forming agent than iron. The adult daily requirement of 3.0 milligrams of copper indicates that although no one food may completely satisfy the daily copper requirements in amounts ordinarily consumed, fish is one of the best sources, especially upon an equal calorie basis (See Table III).

Calcium-Phosphorus Ratios

These two minerals must be considered together because they are said to be absorbed in the approximate ratio of one part of calcium to two parts of phosphorus. Thus, a deficiency of the one limits the degree of absorption of the other. A more recent theory is that neither can be considered independent from protein intake. A deficiency of calcium might

Table I--Iron Content of Edible Portions of Cooked Meats and Fish

Item	Iron Content Total (mgs./100 gms.)		%	Available Iron mg./100 gms.	
	Low	High	Available	Low	High
Bacon:					
back fried	2.8	-	29	0.8	-
collar fried	-	3.9	-	-	1.1
Beef:					
1silverside boiled	7.3	-	10	1.0	-
2topside boiled	-	8.3	-	-	1.6
Chicken:					
boiled	2.1	-	28	0.6	-
roasted	-	2.6	-	-	0.7
Ham:					
boiled, lean	2.5	-	15	0.4	-
boiled, least fat	-	2.6	-	-	0.4
Mutton:					
chop, lean and fat, grilled .	2.5	-	24	0.6	-
chop, lean, fried	-	3.1	-	-	0.7
Fish:					
cod steaks, steamed	0.5	-	100	0.5	-
cod steaks, grilled	-	1.0	-	-	1.0
Flounder:					
fried	1.1	-	97	1.1	-
steamed	-	1.3	-	-	1.3
Haddock fillets:					
steamed	0.7	-	100	0.7	-
fried	-	1.2	-	-	1.2
Sole:					
steamed	0.7	-	-	0.7	-
fried	-	1.4	100	-	1.4
Average--Meat	-	-	-	0.6	0.9
Average--Fish	-	-	-	0.7	1.2

1Silverside--top of round of beef.

2Topside--bottom of round of beef.

Table II--Selected Analyses of Edible Portions of Cooked Meats and Fish

Item	Copper		Calcium		Phosphorus		Acid (-) Base (+) balance cc.N Reagent per 100 gms.	Protein	
	Milligrams per 100 grams				grams			gms./100 gms.	
	Low	High	Low	High	Low	High		Low	High
MEAT:									
Bacon:									
back fried.	-	-	11.5	-	229	-	-12.9	24.6	-
collar fried.	-	-	-	23.2	-	236	-22.6	-	27.4
Beef:									
silverside boiled . . .	0.19	-	-	23.3	243	-	-25.2	28.0	-
topside boiled.	-	0.25	3.6	-	-	247	-28.9	-	33.3
Chicken Meat:									
boiled.	-	-	10.7	-	270	-	-20.7	26.2	-
roasted	-	-	-	14.5	-	271	-25.4	-	29.6
Ham:									
boiled, lean.	-	-	-	17.0	-	244	-22.3	-	23.1
boiled, lean and fat. .	-	-	12.7	-	192	-	-16.2	16.3	-
Mutton:									
chops, lean, fat grilled	-	0.18	-	17.8	206	-	-14.1	19.9	-
chops, lean and fried .	0.13	-	15.4	-	-	222	-16.6	-	22.8
FISH:									
Cod Steaks:									
steamed	0.10	-	14.6	-	242	-	-16.2	18.0	-
grilled	-	0.10	-	49.6	-	274	-21.8	-	20.7
Flounder:									
fried	-	-	-	74.5	218	-	-13.9	17.0	-
steamed	-	-	55.1	-	-	296	-19.7	-	19.4
Haddock:									
steamed	0.13	-	-	-	234	-	-17.7	-	22.0
fried	-	-	69.7	124.1	-	247	-14.0	20.4	-
Sole (Copper Lemon):									
steamed	0.12	-	54.6	-	270	-	-16.9	17.6	-
fried	-	0.16	-	114.0	-	260	-15.5	-	20.1
Mackerel:									
fried	-	0.15	-	28.4	-	280	-12.7	-	20.0
Recap.:									
Meat average.	0.16	0.22	10.8	19.2	228	244	-20.4	23.0	27.0
Fish average.	0.12	0.14	31.1	53.3	241	271	-16.5	18.2	20.4

¹Data for copper content of cod relates to fried rather than grilled method.

result in greater phosphorus absorption by the bone at the expense of the muscle tissue while a deficiency of phosphorus might result in an abnormal calcium absorption by muscle tissue at the expense of the bone with the protein as an intermediary. Thus fish with its high content of both calcium and phosphorus cannot be neglected as an important bone and muscle builder.

Fish ranks second only to dairy products in calcium content while canned fish, in which the softened bones are eaten, is the equal of dairy products. Fish, meat, and milk all have about the same phosphorus content. On the basis of daily adult requirements of 1.30 grams of phosphorus and 0.70 grams of calcium, 3.0 pounds of fish and 7½ pounds of meat would provide the daily calcium requirements and 1¼ pounds of either would satisfy the phosphorus requirements.

A Source of Vitamins

It is but recently that any attention has been given to the vitamin content of fish flesh. Therefore, the data available are very incomplete. On the other hand, the facts that scallops are twice as rich in vitamin C as whole milk; that salmon is much richer in

vitamin D than egg yolk; that salmon is also the equivalent of whole milk in vitamin A; that fish is the equivalent of practically all the fruits and vegetables in vitamin B₁ and superior to fresh fruits and vegetables in vitamin B₂(G), except strawberries and a few leafy vegetables, bring home the realization that fish is a protective food in vitamin as well as in mineral content. In Table III, a comparison is shown between the vitamin content of meat and fish. It is quite apparent that on an equal calorie basis, fish is actually superior to meat except in vitamin B₁ potency.

The proteins of fish contain all the amino acids essential for the nutrition of man. It has long been realized that the biological value of fish proteins ranked very high but quite recently experiments place them on a plane equal to egg albumen (Schormuller-Germany) and consequently higher than any third protein. This coupled with the fact that fish is lower in protein content than meat and consequently lower in caloric value per portion indicates that lean fish is desirable in convalescent and slenderizing diets because appetite satiation is obtained usually at less than half the caloric intake due to meats.

The acidity of a food is usually in proportion to its protein content. This is indicated in Table II which shows that fish has 75 to 80 per cent of the protein and 75 to 80 per cent of the acid-producing value of meat. Coupled with the somewhat greater digestibility of the proteins noted above, fish can be considered an ideal source of proteins for convalescent diets.

Table III--Comparative Vitamin Content¹ of Meat and Fish

Item	A	B ₁	S.B.U. B ₂ (G)	C	D	Calories/ 100 gms.
Bacon	0	90	61	0	0	149
Beef (chuck)	21	28	110	*	0	303
Beef steak	21	30	110	36	13	263
Chicken	0	32	68	80	0	141
Ham, fat	0	480	100	0	0	515
Mutton	0	120	110	50	0	216
Average	7	130	93	32	2	264
Codfish	10	40	64	*	0	79
Haddock	7	40	66	*	0	81
Halibut	x	40	74	*	17	137
Scallops	*	xx	x	60	x	84
Salmon	270	40	80	x	460	246
Average	96	40	71	60	238	125

* Insufficient data. x Fair source but not included. xx Good source but not included in averages.

¹Vitamin content given in International units per gram for A, B, C, and D, and in Sherman-Bourquin units per gram for vitamin B₂(G). This latter vitamin may be more familiar by its generic name, riboflavin.

OYSTERS HAVE EYES
OR
The Travels of a Pacific Oyster

By Eldon Griffin

Published by Wilberlilla Publishers, Seattle, Washington. \$1.00

This 53-page, illustrated booklet on the Pacific oyster industry in Willapa Bay, Washington, is a discussion of the transplanted Japanese oyster, *Ostrea gigas*, from many angles. As the author mentions in the preface, it "touches on science, economics, history, art and other fields". In doing this he has provided many interesting details of the industry that would have been neglected in a purely technical account. The mechanics of the industry are adequately described and there is an account of seed catching in American waters as well as several pages of statistics. Professor Trevor Kincaid, of the University of Washington, a well-known authority on Japanese oysters has contributed a chapter on seasonal conditions in oysters.

Prepared primarily for use as a text for classroom use, the booklet should not only fill this need, but be of considerable interest to all those in the fishing industry whose operations concern shellfish.

The author is an experienced oyster farmer, a former University professor, and a research writer in the field of Asiatic-Pacific problems, and has recently completed a manuscript for a three-volume illustrated work on the fishery industries of Washington.

METHODS FOR UTILIZATION OF STARFISH SOUGHT BY SERVICE

To discover possible commercial uses for starfish, drills, mussels, and other pests on oyster beds is the purpose of a new project just begun by technologists of the Service's Division of Fishery Industries.

Under a continuing annual Congressional appropriation of \$10,000, two specially appointed Service chemists will undertake extensive chemical and other analyses of these hitherto waste products in an attempt to determine their possible medicinal or other new uses.

Starfish, bitterest foe of the oystermen, are currently marketless, even as fertilizer. Some years ago, however, when they were worth up to \$7.50 a ton for their plant food qualities, there were a few firms—notably one in Virginia—which crushed and sold the dried skeletons as commercial fertilizer. They contain about 20 percent mineral matter—mostly lime, but also potash, phosphoric acid, and nitrogen.

In France, Belgium, and Canada, starfish are, so far as is known, still made into fertilizer; and during World War I days they were made into a meal and used as a stock feed. Lately, however, in this country, they have been dragged and dredged from oyster beds and simply put upon the banks to dry and rot. Oyster growers have had to spend \$4,000 to \$10,000 a year to destroy the pests.

New hope is now given these oystermen that they may at least partially recover on this loss. For it is believed that various valuable commercial products may be made from the starfish. They may be a source of vitamins—vitamin A is suggested, for example, the one commonly considered involved with defects of the eye, lack of which causes "night-blindness". They may be a source of supply for various medicinal chemicals, or some new method may be found for utilizing them as plant food.

After field collection of samples, preliminary work will be started at the Milford (Conn.) laboratories of the Service. Actual final analyses and tabulation of results will be made at the Service's new College Park (Md.) technological laboratory.

WHOLESALE AND RETAIL PRICES

The comprehensive wholesale price index of the Bureau of Labor Statistics, comprising nearly 900 price series, was 91.2 percent of the 1926 average on September 27. This is 0.4 percent below the 11½-year peak reached in mid-September—0.7 percent above August 30 and 17.4 percent higher than on September 28 last year. During the week ending September 27 prices for fats and oils increased 2.6 percent, the average of these commodities now being 133 percent higher than a year ago.

Retail food prices again rose sharply between mid-August and mid-September, the cost of food for the moderate income family going up 2.6 percent. Advances were country-wide and affected most of the important foods except fresh fruits and vegetables which were selling at seasonally low levels. Since March of the current year when the rapid rise in food prices began there has been an increase of 12.6 percent.

In the last two weeks of September, according to preliminary reports, the rise in retail markets was at a much slower rate than in the previous month as wholesale prices moved downward. Particularly sharp increases were reported in retail prices for canned salmon as many retailers reported acute shortages of red salmon because of the Government's purchase policy. In 51 cities the retail price of a 1-pound tall can of pink salmon averaged 19.8 cents on September 16—a rise of 5.9 percent since August 12 and 26.1 percent since September 17 a year ago. The retail price of a 1-pound tall can of red salmon averaged 33.7 cents, 10.1 percent above August 12 and 30.1 percent above a year ago.

HADDOCK AND ROSEFISH LANDINGS HEAVY

Two species—haddock and rosefish—accounted for 65 percent of the 45,835,000 pounds of fishery products landed during August by fishing vessels of 5 net tons and over at the ports of Boston and Gloucester, Mass., and Portland, Maine. Deliveries of haddock totaled 14,777,000 pounds, an increase of 10 percent as compared with the poundage of this species landed in August last year, while the receipts of rosefish, which amounted to 14,922,000 pounds, were 68 percent greater than the landings in the same month a year ago.

In spite of the heavy landings of haddock and rosefish, the total receipts of all species for the month were only 2 percent above the landings for August 1940. This was largely the result of reduced catches of cod and mackerel. Landings of cod during the month totaled 3,118,000 pounds, 48 percent below those of a year ago, while receipts of mackerel amounting to 3,121,000 pounds were 52 percent below deliveries of this species in August 1940.

Although total landings at the three ports during August were only 2 percent greater than those in the same month last year, the \$1,473,000 received by fishermen for their catch was 39 percent greater than the amount they received for the fish landed in August 1940. The average price paid for the fishery products delivered to the three ports in August of this year was 3.21 cents per pound, as compared with 2.35 cents in the same month a year ago.

A total of 313,799,000 pounds of fishery products, valued at \$9,649,000 was landed at the three ports during the first eight months of 1941. This was an increase of 32 percent in the volume of the landings, and 42 percent in their value as compared with the same period last year. Three species accounted for 82 percent of the total landings during the first eight months of the current year. These were haddock, 108,161,000 pounds; rosefish, 93,634,000 pounds; and cod, 55,370,000 pounds.

The catch of rosefish, which is landed principally at Gloucester, has been much larger than in any previous year. During the first eight months of 1941 landings of this species at the three ports were 75 percent greater than in the same period last year, and were nearly 10,000,000 pounds greater than the poundage landed during the entire year of 1940.

FISHERIES OF MAINE

The lack of herring suitable for packing in western Maine waters has been very discouraging to the sardine packers in Portland and South Portland, according to the Service's marketing agent in that area. These plants have had a very small pack to mid-September. Plants in eastern Maine enjoyed a rush season during the early summer, although the supply of herring has fallen off considerably in the past few weeks. Lobster catches are running about the same as they did during the same period last year. There is still a good demand for crabs in the Hancock County area.

The State has leased kelp grounds to an alginic acid firm in Rockland, according to the local press, and it is expected many lobster fishermen will be employed for a few hours daily at low tide, gathering kelp. The beds are said to extend eastward from Rockland.

LARGE MAINE RUNS OF STRIPED BASS CONSIST OF MIGRANTS

It appears very probable that the increase in the catch of striped bass in Maine waters, beginning in 1938, was the result of fish migrating to those waters, rather than from local reproduction, according to the report of a cooperative survey of certain Maine rivers just completed by biologists detailed to the study by the Maine State Development Commission, Department of Sea and Shore Fisheries, and the U. S. Fish and Wildlife Service. Furthermore, there is evidence that the increase in the catch of striped bass, beginning in 1938 in Maine waters, resulted from the same dominant year class which has been largely responsible for the phenomenal increase in the catch of striped bass since 1936 at other points along the coast extending as far south as Virginia.

This increase in recent years resulted principally from an unusually successful spawning and survival of striped bass in 1934 in the Chesapeake Bay region. Some of these fish migrated out of that bay in the spring of 1936 and thus became available that year and thereafter to date at many northern points, apparently as far north as Maine and possibly in some of the Canadian waters.

Although it is not definitely known why striped bass have not reproduced successfully in Maine waters since 1938, even though an adult stock has been present there, the results of this recent survey have suggested a possible explanation. It is believed that the tremendous tide changes or elevations of 10 to 22 feet which are common in Maine waters, prevent reasonably stable conditions suitable to successful spawning and survival of striped bass.

The investigators conclude that the supply of bass in Maine waters includes a summer stock of fish which appears as a result of the general seasonal migration up the coast; these bass remain in Maine waters during the summer and undoubtedly leave in the fall on a migration to southern regions in accord with the general movement which occurs in other New England waters. It is possible that a very limited number of this summer stock of bass may winter in some of the Maine rivers.

FISHERIES OF MASSACHUSETTS

A recent agreement with regard to rosefish (redfish) catches landed at Gloucester has been approved by the Atlantic Fishermen's Union, the Fish Dealers of Gloucester, the Boat Owners of Gloucester, and the Gloucester Sea Food Workers' Union, according to the Service's marketing agent in that port.

The new agreement limits catches according to the capacity of the fishing vessels. Craft with a carrying capacity of 50,000 pounds are limited to landing 45,000 pounds. The limitations vary with larger vessels until those capable of carrying 150,000 pounds are permitted to land only 100,000 pounds. A 3,000 pound leeway is permitted. The penalty for exceeding the limits set is an extra day in port for each unit of 5,000 pounds over the prescribed carrying capacity. All boats must remain in port 4 days between rosefish trips.

Provisions also are included to cover dealers violating the agreement. No boat is permitted to hold over rosefish to the following day for a dealer if any other concern may be in a position to handle the trip on the same day.

Rosefish prices in Gloucester have recently increased to \$2.00 per hundred pounds. The former price was \$1.85.

Gloucester mackerel landings during September approximated $3\frac{1}{2}$ million pounds of small fish selling for the greater part at \$1.60 per hundred pounds. Mackerel were plentiful and easy to catch, with most of the fleet operating within 50 miles of the port. On several occasions the seiners could be seen from Gloucester fishing at several points along the shore. The greater portion of the catch was canned as the fish were a little smaller than is usually desired for other methods of marketing.

At the end of September the gill net fleet for pollock numbered 15 boats with a few others yet to take aboard their nets. The catch has been moderately light with no large body of fish as yet on the shoal grounds. Most of the small draggers which have been fishing for whiting out of Gloucester have now given up this fishery for the winter. Most of the trap fishermen also have hauled out their gear for another year.

MACKEREL CATCHES BY SMALL FLEET CONTINUE HIGH IN MASSACHUSETTS

New England purse-seine vessels, fishing home waters in the Cape Cod area, landed better than 3,250,000 pounds of mackerel from mid-July to mid-August, according to recent tabulations by Service biologists, bringing their season's total to over 12,750,000 pounds, approximately 70 percent of seiner production during the corresponding period last year.

During the month, mackerel landings were made by only 20 seiners. This number is significant of the decline in seining effort when compared with the fleet of 34 vessels five years ago (1937), and 75 or more vessels ten years ago (1932), seining for mackerel in the Gulf of Maine during a comparable period. That mackerel landings should continue so high with such a small fleet indicates a high availability. This undoubtedly has been made possible by a relatively abundant group of mackerel averaging approximately one pound.

Mackerel averaging about one pound in weight in mid-August constituted the dominant size group in the seine fishery so far this season. This size group is a combination of two broods, the 1937 and 1938 year classes. Mackerel of the 1937 class entered the seine fishery in September of 1937, when they were less than one year old and averaged about one-fifth of a pound in weight. Appreciable numbers of mackerel of the 1938 class were first taken by the seine fishery in May of 1939, when they were about one year old and averaged nearly one-half pound in weight. Thus, the 1937 class has been present in the seine fishery four years and the 1938 class two and one-quarter years. Difference in growth rate between the two year classes is the cause of their now being practically indistinguishable in size and weight.

AUCTIONING OF FISH BEGUN AT NEW BEDFORD

Through the cooperation of vessel owners, fishermen, the Atlantic Fishermen's Union, and the principal buyers, most of the catch of fish landed at New Bedford, Mass., now is being sold at auction, according to reports to the Service from that area.

Open bidding for the catches landed has been in effect since July 15 and is now being conducted in the Wharfinger's Building, Pier 3. The auction is open to boat owners, captains, fishermen, and buyers or dealers.

Upon docking, each vessel reports its catch in detail to one of the dealers who relays the information to the other buyers. The number of buyers at the time of the report was four. At an appointed hour, there being no fixed selling time, the buyers, and usually the captains, meet in the selling room and the fish are sold at auction. In the absence of the captain, the trip is sold by some other authorized person, usually the mate or a designated member of the crew.

Purchasers, to be able to bid, must be recognized buyers, willing to abide by the rules; possess a satisfactory financial standing; and have adequate facilities for discharging fish from the vessels.

The regulations provide that yellowtail flounders must be sold between 8 a.m. and 10 a.m. Trips docking later than 10 a.m. must either hold over until the next morning or proceed to another port. These rules apply week days and Sundays.

Blackbacks and lemon sole must be sold between 8 a.m. and noon on week days and between noon and 2 p.m. on Sundays. Cod, haddock, and similar groundfish may be sold at any time during the day.

All scallop trips must be sold between 8 a.m. and noon on week days only. None may be taken out or sold on Sunday. In the event scallop draggers arrive in the afternoon and wish to sell, the buyer must pay at least the highest morning price. However, no scallops may be removed from a vessel after 6 p.m.

All sellers reserve the right to refuse to sell. In such a case they must either hold over until the following day or go elsewhere. It is understood that this has occurred only rarely.

Buyers must take the entire trip at the price bid unless the fish are predominantly irregular in size or are of questionable quality. Such cases, which, it is understood, seldom arise, are settled by the decision of two or three qualified but disinterested parties.

Swordfish trips are sold at auction except for incidental or spare fish.

Mackerel trips are not sold at auction.

The fishermen have voted to restrict yellowtail trips to 5,000 pounds per man in the crew, with a maximum of 45,000 pounds. Yellowtail vessels must hold over in port forty hours after the trip is sold. Scallop draggers are limited to 150 gallons of scallops per man. This usually means 1,500-gallon fares as the crews consist of ten men. To insure the quality of their fares, scallop draggers are only allowed 8 days from the time of the first drag in which to make their catch. At the expiration of that period they must head for port.

It is understood that changes are being made in the auctioning procedure from time to time and that the organization of an Exchange has been discussed.

FISHERIES OF NEW JERSEY

Food fish taken by purse seiners in the waters off Cape May County have increased in abundance during the latter part of August and the first part of September, according to the Service's marketing agent in New Jersey. This is especially true of one-half-pound weakfish and croakers. Some increase in the abundance of one-pound bluefish also was noted. All of the above species were taken in waters close inshore. Large bluefish were reported in fairly large numbers over thirty miles out.

Catches of fluke and sea bass by otter trawlers have been 50 percent and 25 percent greater, respectively, during the present season when compared with the same period a year ago. Fishermen and wholesale dealers attributed the increase to the very good fishing weather which continued throughout the greater part of the season. Operators of fish pots have taken double the quantity of sea bass and from three to four times as many lobsters as in 1940. The number of pots in use has increased about 50 percent. Pot fishermen are experiencing considerable difficulty at present in obtaining sufficient cork for use as buoys for the pots and unless other arrangements can be made to secure corks, it is probable that the number of pots in use will decrease considerably at the beginning of the 1942 season. Fishermen also report the loss of considerable numbers of buoys caused by naval vessels engaged in mine-sweeping maneuvers.

FISHERIES OF MARYLAND

The crab season, particularly for soft crabs and peelers, was about ended on Chesapeake Bay on September 15, according to the report of the Service's marketing agent in that region. The great majority of the fishermen have abandoned crabbing and taken up oyster-tonging in the sections of the Bay where the tonging season opened September 1. The dredging season does not begin until November.

Crabs of all varieties have been scarce in the Bay during the season just ended. The usual early run of soft crabs and peelers appeared in Crisfield and Saxis Island. An early run also occurred at Tangier Island, but the catch was greatly decreased as compared with the usual early season run. After the early run, a gradual drop in catch of all varieties was noted. It finally became so marked that many of the fishermen, especially those fishing for soft crabs and peelers, ceased fishing entirely. Undoubtedly this was partially due to the demand for workers in plants having defense orders in nearby Baltimore and Newport News. Because of this development, a number of the shedding houses closed also. In practically every section of Maryland hard crabs were large—much larger than usual in some sections, with very few small ones being seen. Hard crab prices have been very good.

The chief source of supply of hard crabs for Crisfield this season has been Worcester County, Chincoteague Bay, and Sinepuxent Bay. Since the storm of August 1933 opened the inlet at Ocean City, crabs have been coming in there in greatly increased numbers.

FISHERIES OF THE SOUTH ATLANTIC STATES

The fisheries of the South Atlantic States are in a healthier condition than in recent years, due to a good demand, average supplies with no gluts, and higher prices than those of the past few years, according to the Service's marketing agent in those States. Fishermen and dealers are optimistic over the prospects for the next few months and are looking forward to the fall season.

With the first cool weather in mid-September, mullet were caught in large quantities, particularly by seining crews on North Carolina beaches.

The crab production of Georgia and South Carolina has increased during the last few years, and preparations indicate a busy season this year. The hurricane in August 1940 in these States halted the industry for a period, wrecking docks and sheds. However, the damage was repaired in time for the oyster season and plants were enlarged for crab-picking as well.

TERRAPIN PRODUCTION AT BEAUFORT, NORTH CAROLINA, A RECORD

All past records again were broken when 16,131 young diamond-back terrapin were produced this past season at the Beaufort (N.C.) fishery biological laboratory of the Service.

This Federal farm, the world's largest for culture of the species, has hatched and reared over 160,000 of these salt marsh turtles for restocking Southern coastal areas since the artificial propagation of this species was first undertaken in 1909. The hatchery activities serve to provide an annual crop of young terrapin for restocking depleted coastal waters and also protect them during the first winter from destruction by serious natural enemies such as rats, mink, and gulls.

Over 93 percent of this year's output of terrapin, which hatched in the fall of 1940, were successfully reared to an age of nearly 10 months before distribution in the South Atlantic region.

AUGUST WHOLESALE RECEIPTS IN CHICAGO 11 PERCENT UNDER JULY

Receipts of fresh and frozen fishery products on the Chicago wholesale market during August and the first 8 months of 1941 were greater than during comparable periods in 1940. In August, however, 11 percent less fish was received than during July, according to the Service's Market News office in Chicago. Most of the more important varieties participated in the July decline—exceptions being lake trout, yellow pike, and carp.

Receipts of Fishery Products at Chicago

Item	August 1941	Aug. 1941 compared with July 1941	Aug. 1940	8 months Jan. - Aug. 1941	8 mo. 1941 com- pared with 8 mo. 1940
Classification:	Pounds	Percent	Percent	Pounds	Percent
Fresh-water fish	2,034,000	- 9	+21	22,856,000	+12
Salt-water fish	1,910,000	- 9	+22	13,306,000	+28
Shellfish, etc.	442,000	-27	+13	5,382,000	-11
Total receipts	4,386,000	-11	+20	41,544,000	+13
Leading items:*					
Carp	124,000	+ 2	+29	1,332,000	+15
Lake herring	131,000	-32	+ 7	1,774,000	- 5
Lake trout	520,000	+18	+35	3,865,000	+12
Whitefish	256,000	-37	+10	2,636,000	- 6
Yellow perch	343,000	-17	+15	2,452,000	+34
Yellow pike	101,000	+26	-10	1,247,000	- 4
Halibut	550,000	-20	-28	5,030,000	- 1
Rosefish fillets	503,000	-34	+48	3,162,000	+37
Shrimp	176,000	-48	-37	3,285,000	-19
Leading sources:					
Massachusetts	1,110,000	0	+89	5,984,000	+60
Michigan	396,000	- 7	- 8	4,175,000	-12
Ohio	299,000	-19	+16	1,707,000	+17
Wisconsin	486,000	-14	+64	5,441,000	+ 6
Alberta	238,000	+68	+98	781,000	-25
British Columbia	658,000	-18	-21	5,333,000	+28
Domestic total	3,263,000	- 9	+28	28,336,000	+11
Imported total	1,123,000	-17	+ 3	13,208,000	+17
Transported by:					
Truck	1,990,000	-10	+46	16,945,000	+36
Express	1,507,000	- 8	-14	10,794,000	-16
Freight	889,000	-19	+73	13,805,000	+21

* Includes fresh and frozen fish.

FISHERIES OF WASHINGTON AND OREGON

In connection with the upstream salmon migration over Bonneville Dam, the records indicate that during the period of September 1 to 20, 338,275 chinook salmon were counted over Bonneville Dam en route to the spawning grounds, according to the Seattle Fishery Market News Service office. This represents an increase of 41 percent over September 1940, the previous high month since data have been available. This escapement was accompanied by the largest recorded catch of Columbia River salmon in the history of the fisheries during any single month. From the opening of the fall season on September 10 to September 20, over 8,000,000 pounds of chinook salmon were reported taken in the Columbia River commercial fisheries, chiefly by gill nets. This production is approximately 80 percent of the normal Columbia River catch for the entire season. The run slacked off materially during the week ending September 27.

The otter trawl fishery is an important source of dogfish livers which are becoming more and more valuable as a source of Vitamin A. Prices paid fishermen for dogfish livers during the past 60 days have increased from 8 cents to 30 cents per pound. During September fishermen received as high as \$6 per pound for soupfin shark livers delivered in Seattle. The average price during September was \$3.25. On September 29 the record price of \$6.60 per pound was paid at Astoria, Oregon.

Receipts of fish at Seattle during the third week in September were the heaviest of the year. With the close of the halibut season in Area III vessels were returning to port with their final fares. On Saturday, September 20, 18 vessels from the Western Banks and

3 from Local Banks landed 671,100 pounds of halibut, a record for a single day's transactions on the Seattle Fish Exchange. In addition to the halibut deliveries, large quantities of Columbia River chinook salmon were shipped to Seattle as the fall run continued to break all records.

BRITISH COLUMBIA PILCHARD OIL

Six meal and oil reduction plants operated in British Columbia this year. The American tariff on pilchard oil imports restricts Canadian exports to a negligible amount, according to Foreign Commerce Weekly. Approximately 75 percent of the fish meal produced in British Columbia is sold in the United States. Although early in the season exports of fish meal were temporarily halted in consequence of representations from agricultural interests, the fishing industry protested such treatment and it is understood that the necessary permits for exportation of this meal to the United States are now being freely issued by the Fisheries Department in Vancouver.

Landings of pilchards in British Columbia to September 27 this year as reported by the Chief Supervisor of Fisheries in Vancouver amounted to 49,796 tons, as compared with 26,629 tons on September 28 last year. Production of meal and oil totaled 8,959 tons and 1,482,997 imperial gallons, respectively.

COD-LIVER OIL IMPORTS FROM ICELAND DECREASE IN 1941

Natives of Iceland were the first to equip their trawlers with steam cookers to cook cod livers immediately after the fish are caught, thus retaining a higher vitamin content in the oil, according to Foreign Commerce Weekly. Crude oil is prepared aboard ship.

There is no central market for cod-liver oil, or exchange giving daily quotations; in fact, producers are reported to sell the same grade of cod-liver oil on the same day at varying prices. There is an export committee—self-organized and not under State control—whose members are from large cod-liver oil producing concerns. On January 1, 1941, this committee set a minimum price of \$550 per ton on refined cod-liver oils, but prices have actually ranged as high as \$750 per ton. The pre-war price was between \$195 and \$250 per ton, and on January 1, 1940, the price was \$200 per ton.

There are no cod-liver oil stocks in Iceland, and producers are said to sell oil in advance of the cod catch. As cod-liver oil is merely a byproduct, producers being primarily interested in the cod itself, production depends on the cod demand, which is low. As a result, little oil is being prepared at this time, and the demand for what does come into the market is accordingly strong.

There is a large amount of cod-liver oil stearine on hand at Iceland refineries. Norway was normally the only purchaser, bids of American buyers having been rejected as too low.

The 1940 yield of cod-liver oil from Iceland cod fisheries amounted to 5,624 tons, compared with 6,577 in 1939 and 5,895 in 1938. The peak year for cod-liver oil was 1925, with 7,606 tons. The amount of oil produced varies not only with size of catch but also with prevailing feeding conditions.

Iceland's export trade in cod-liver oil represents only a fraction of the country's total shipments. The United States normally takes 95 percent of total production; however, British interest in Icelandic cod-liver oil has had the effect of reducing American purchases by about \$1,000,000 in 1941, compared with 1940. Exports to the United States during the first 5 months of 1941 are recorded as 1,722,988 kilograms, compared with 3,101,550 kilograms in the same period of 1940.

It is estimated that during the remaining months of 1941, Iceland will ship approximately 474,000 kilograms of cod-liver oil to the United States, making a total of only 2,196,988 kilograms for the year. During 1940, exports to the United States reached 5,623,650 kilograms, against 6,081,537 in 1939.

FISH OIL PLANT NEEDED IN INDIA

India is taking increasing interest in the fish-oil extraction industry as a result of experiments conducted by the Bombay Department of Industries, and especially in view of the abundance of desirable varieties of fish along the Bombay coast, according to Foreign Commerce Weekly. Indian firms that may know little of plant, process, or specification requirements have manifested an interest in expanding industry generally.

In this connection, a Bombay firm has asked for quotations on a complete plant for the extraction of oil from shark and other fish livers. Interested American concerns desiring to send literature or communicate directly with the inquirer in Bombay may obtain information as to the inquirer's business reputation and standing upon application to the Bureau of Foreign and Domestic Commerce. (Reference, 9047). Washington, D. C.

JAPAN USING LEATHER FROM MARINE SOURCES

The shortage of cow hides in Japan has caused a widespread resort to substitutes, according to Foreign Commerce Weekly. More expensive leathers are being replaced by cheaper land animal leather as well as leather made from sea animals. Most of the leather from the latter is obtained from whales, sharks, dolphins, salmon, and codfish.

Skins of small fishes are thin and can be used only for women's shoes and handbags. Shark leather is on the market as a substitute for shoe leather but the amount available is extremely small.

FISHERIES OF UNION OF SOUTH AFRICA

The catch of trawl-caught fish taken by Union of South Africa fishermen in 1940 amounted to 20,464,378 pounds, compared with 37,145,110 in 1939 and 40,131,519 in 1938, according to Foreign Commerce Weekly. Reason for reduction: 50 percent of the trawlers have been diverted for duty as mine sweepers.

Exports of fish were as follows (in pounds):

	1939	1940
Crawfish tails, fresh or frozen	2,721,335	2,306,481
Other fish, fresh or frozen	1,509,464	1,236,698
Crawfish, canned or bottled	3,111,905	3,517,272
Dried and cured fish	3,396,970	3,993,053
Preserved fish	9,101	729,811

The most important fish products item exported to the United States is frozen crawfish tails. Shipments in 1939 amounted to 1,735,965 pounds and in 1940, 1,690,335 pounds.

UNION OF SOUTH AFRICA PRODUCES LIVER OIL

In the past year or so some quantities of stockfish liver oil and gray shark liver oil have been exported to the United States and also to the United Kingdom from the Union of South Africa, according to the Commercial Intelligence Journal, a Canadian publication.

Actually the production of fish oils, as distinguished from whale oil is still in its infancy in South Africa. The raw material, however, is available in large quantities. Current production of fish amounts to between fifty and sixty million pounds a year. The livers and viscera from this catch alone give a substantial quantity of raw material. In addition there are available, when required, immense quantities of fish for reduction to meal and industrial oils. For example, large schools of pilchards are reported annually off the shores of Natal; these could provide steady supplies of fish for reduction as well as canning.

For the present, however, there is no plant in South Africa engaged in the reduction of whole fish. Two commercial plants in Cape Town produce vitamin-containing oils; both obtain their raw material from the fish-processing plants in Cape Town. One plant uses the livers only and concentrates on the production of high vitamin medicinal oils and is capable of producing ten to twelve tons a month. The livers of the stockfish, *Merluccius capensis*, (similar to the European hake) and the "soup-fin" or gray shark are most favored because of the excellent results obtained, but all fish livers may be used. The other plant has been in operation for some time and is producing a moderate quantity of whitefish meal from fish heads, tails, bones and culls, and of vitamin-containing oil from the livers. A much smaller plant is in production at a fishing centre slightly over a hundred miles south-east of Cape Town and is concentrating on the production of shark liver oil. Another small factory for the production of shark liver oil is projected at a point near Cape Town.

It is stated that the stockfish liver oil shows a vitamin A potency averaging about 10,000 international units and a vitamin D potency averaging about 200 units per gram. The shark liver oil, on the other hand, has shown a vitamin A potency ranging from 10,000 to 200,000 international units per gram; the mean of this range is stated to be about 70,000. The vitamin D potency of the shark liver oil is still subject to test but is believed to be negligible. Specifications in all cases are those of the British Pharmacopoeia or B. P. Codex.

The stockfish oil is reported to be available to the trade at about 10s. a gallon, free on rail. On the other hand, fish liver oil for feeding, rated at 350 Lovibond blue units, is made available at interior points at 6s. 6d. per gallon in bulk.

FROZEN FISH TRADE

Holdings of Frozen Fishery Products Reach New High

Holdings of frozen fish and shellfish in United States and Alaskan cold-storage plants totaled 102,163,000 pounds on September 15. This was the largest volume of frozen fishery products ever held in this country. The holdings were over 2,000,000 pounds greater than the previous high which occurred on December 15, 1940. Since the peak holdings for each year usually occur during November or December, it is expected that stocks will show considerable further increase before beginning their seasonal decline.

Stocks of frozen fishery products on September 15 were nearly one-fifth greater than the poundage in storage on the same date last year, and were 26 percent larger than the average holdings on this date during the previous 5 years. Important items held in considerably greater volume than a year ago were croakers, which increased 190 percent; rosefish fillets, 135 percent; flounders, 140 percent; and whiting, 33 percent. Three items—haddock fillets, halibut, and whiting—accounted for 41 percent of the total volume of fishery products in domestic cold-storage plants on September 15.

Holdings of Fishery Products in the United States 1/

Item	Sept. 15 1941	Sept. 15 compared with			Aug. 15 1941	Sept. 15 1940	5-yr. av. Sept. 15
		Pounds	Percent	Percent			
Frozen fish and shellfish:							
Total holdings	102,163,000	+12	+ 18	+ 26	90,885,000	86,321,000	80,852,000
Important items:							
Croakers	4,631,000	+10	+190	+118	4,229,000	1,596,000	2,129,000
Fillets:							
Cod	2,420,000	- 7	+ 41	+ 11	2,616,000	1,721,000	2,173,000
Haddock	11,195,000	+30	+ 41	+ 38	8,630,000	7,933,000	8,089,000
Rosefish	4,889,000	+ 6	+135	(2)	4,631,000	2,079,000	(2)
Flounders	1,440,000	+11	+140	+194	1,296,000	599,000	490,000
Halibut	16,027,000	+13	+ 11	+ 24	14,156,000	14,451,000	12,889,000
Sea herring	1,304,000	-12	- 13	+ 18	1,478,000	1,497,000	1,104,000

Holdings of Fishery Products in the United States (Continued) 1/

Item	Sept. 15 1941	Sept. 15 compared with			Aug. 15 1941	Sept. 15 1940	5-yr. av. Sept. 15
		Aug. 15 1941	Sept. 15 1940	5-yr. av. Sept. 15			
	Pounds	Percent	Percent	Percent	Pounds	Pounds	Pounds
Frozen fish and shellfish (continued):							
Mackerel	4,982,000	+16	-44	-19	4,313,000	8,939,000	6,141,000
Sablefish	799,000	+10	-42	-36	727,000	1,389,000	1,244,000
Salmon	8,233,000	+67	-6	+8	4,938,000	8,795,000	7,614,000
Smelts	1,788,000	-5	+7	+35	1,875,000	1,676,000	1,320,000
Whiting	14,443,000	+7	+33	+26	13,534,000	10,843,000	11,437,000
Whitefish	1,419,000	+13	-20	+11	1,257,000	1,779,000	1,279,000
Scallops	1,486,000	+16	-9	(2)	1,279,000	1,635,000	(2)
Shrimp	1,744,000	+18	-16	(2)	1,483,000	2,085,000	(2)
Squid	1,023,000	-18	-31	-46	1,250,000	1,474,000	1,884,000
Cured fish:							
Herring, cured	17,593,000	-5	-25	-4	18,547,000	23,432,000	18,374,000
Salmon, mild-cured	1,932,000	+18	+11	+5	6,727,000	7,117,000	7,572,000

1/ Statistics furnished by the Agricultural Marketing Service, Department of Agriculture.

2/ Data not available.

Freezings of Whiting Continue Heavy

During the month ended September 15, as in the previous two months, whiting led all other species in the volume of fishery products frozen. Of the total of 28,710,000 pounds of fish and shellfish frozen during the month, whiting accounted for 6,233,000 pounds or 22 percent. Other leading items frozen during the month were salmon which accounted for 14 percent of the total; rosefish fillets, 13 percent; and haddock fillets, 11 percent. Freezings of all important items except mackerel, salmon, and shrimp were above those for the same period last year.

Freezings of Fishery Products in United States Cold-storage Plants 1/
(Figures are for the month ending on the date indicated)

Item	Sept. 15 1941	Sept. 15 compared with			Aug. 15 1941	Sept. 15 1940	5-yr. av. Sept. 15
		Aug. 15 1941	Sept. 15 1940	5-yr. av. Sept. 15			
	Pounds	Percent	Percent	Percent	Pounds	Pounds	Pounds
Total fish and shell fish	28,710,000	-16	+21	+46	34,208,000	23,707,000	19,659,000
Important items:							
Croakers	656,000	-66	+1,829	+417	1,909,000	34,000	127,000
Haddock fillets	3,150,000	-8	+36	+16	3,439,000	2,321,000	2,722,000
Rosefish fillets	3,661,000	-6	+71	(2)	3,878,000	2,140,000	(2)
Halibut	1,917,000	-8	+33	+102	2,087,000	1,436,000	947,000
Mackerel	1,662,000	-33	-19	+20	2,485,000	2,047,000	1,383,000
Salmon	3,955,000	+85	-5	+12	2,137,000	4,184,000	3,532,000
Whiting	6,233,000	-35	+42	+119	9,644,000	4,393,000	2,843,000
Shrimp	1,160,000	+125	-19	(2)	516,000	1,440,000	(2)

1/ Statistics furnished by the Agricultural Marketing Service, Department of Agriculture.

2/ Data not available.

September Cold-storage Holdings Larger in Boston

Boston cold-storage holdings were above the previous month and year at the end of September, according to the Service's Market News office in that city. The gains were slight, 14 and 2 percent, respectively. Increases during the month were not large except

for mackerel with 64 percent. Rosefish holdings, however, were almost four times those of last year.

Holdings of whiting, except round fish and that held for animal food, amounted to 7,699,000 pounds on September 13 in 15 warehouses in Maine and Massachusetts. This total was about 400,000 pounds under the previous week and 228,000 pounds less than on August 16.

Boston Cold-storage Holdings

Item	Sept. 24, 1941	Sept. 24 compared with		Aug. 27, 1941	Sept. 25, 1940
		Aug. 27, 1941	Sept. 25, 1940		
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	15,875,000	+14	+ 2	13,968,000	15,560,000
Leading items:					
Filletts:					
Cod	336,000	- 5	- 51	354,000	681,000
Haddock	5,598,000	+26	+ 33	4,446,000	4,201,000
Rosefish	458,000	+15	+372	397,000	97,000
Mackerel	2,079,000	+64	- 50	1,271,000	4,169,000
Smelt	521,000	-13	+ 15	595,000	455,000
Scallops	480,000	+14	- 4	421,000	499,000

New York City Cold-storage Holdings Up 13 Percent in September

At the end of September, New York City cold-storage warehouses had 13 percent larger inventories of frozen fishery products than at the end of August and 3 percent greater than in September a year ago, according to the Service's Market News office in that city. Among the more important species showing increases during September as compared with August were butterfish, mackerel, king salmon, scup, whitefish, and scallops. Scup and spiny lobster tails were held in much greater quantities than a year previous. The decrease in shrimp holdings from September 1940 was particularly marked.

New York Cold-storage Holdings

Item	Sept. 25, 1941	Sept. 25 compared with		Aug. 28, 1941	Sept. 26, 1940
		Aug. 28, 1941	Sept. 26, 1940		
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	7,866,000	+13	+ 3	6,950,000	7,653,000
Leading items:					
Butterfish	488,000	+41	+ 94	345,000	251,000
Mackerel	638,000	+20	- 40	530,000	1,060,000
Salmon, king (chinook)	379,000	+10	- 15	344,000	443,000
Scup (porgy)	203,000	+ 5	+464	193,000	36,000
Sturgeon	255,000	-11	- 58	285,000	602,000
Whitefish	850,000	+43	- 28	596,000	1,175,000
Lobster tail, spiny	382,000	-15	+271	451,000	103,000
Scallops	471,000	+26	+ 43	373,000	330,000
Shrimp	144,000	-75	+ 42	101,000	568,000

Cold-storage Stocks in Chicago Increase 5 Percent in September

In accordance with the seasonal trend, Chicago cold-storage warehouses had stored 5 percent more frozen fishery products at the end of September than at the end of August, and 20 percent more than in September 1940, according to the Service's Market News office in that city. Changes from August holdings were not great. Considerable gains over the previous year, however, were registered for rosefish and haddock fillets, lake trout, and smelt.

Chicago Cold-storage Holdings

Item	Sept. 25, 1941	Sept. 25 compared with		Aug. 28, 1941	Sept. 26, 1940
		Aug. 28, 1941	Sept. 26, 1940		
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	4,164,000	+ 5	+ 20	3,972,000	3,471,000
Leading items:					
Chubs	185,000	+16	(1)	159,000	(1)
Lake trout	208,000	+40	+ 76	149,000	118,000
Smelt	397,000	+ 2	+ 40	388,000	284,000
Whitefish	201,000	-22	- 32	256,000	294,000
Fillets:					
Haddock	280,000	+ 2	+180	274,000	100,000
Rosefish	482,000	+46	+249	330,000	138,000
Halibut	349,000	+ 7	- 20	327,000	436,000
Shrimp	181,000	+29	- 29	140,000	254,000

1/ Data not available.

Canadian Stocks of Frozen Fish Increase

Canadian cold-storage plants held 33,090,000 pounds of frozen fresh fishery products and 3,825,000 pounds of frozen smoked fish on September 1 of the current year, according to data released by the Dominion Bureau of Statistics. This was an increase of 8 percent in the holdings of frozen fresh fish, and of 70 percent in those of frozen smoked fish, as compared with the quantities on hand September 1, 1940.

The principal items of frozen fresh fish held in Canadian freezers on September 1 were sea herring, 9,481,000 pounds; halibut, 8,235,000 pounds; salmon, 3,838,000 pounds; and cod fillets, 3,132,000 pounds. Holdings of halibut and cod fillets were, respectively, 85 percent and 61 percent greater than on the same date in 1940, while stocks of mackerel showed a decrease of 43 percent.

A total of 10,785,000 pounds of fresh fish and 1,290,000 pounds of smoked fish were frozen by Canadian freezers during August. As compared with the same month last year, this was a decline of 25 percent in the freezings of fresh fish but an increase of 36 percent in the volume of smoked fish frozen. The principal items of fresh fish frozen during the month were sea herring, 4,197,000 pounds; cod fillets, 2,058,000 pounds; salmon, 1,812,000 pounds; and halibut, 1,197,000 pounds. Two items accounted for 92 percent of the total quantity of smoked fish frozen during August. These were sea herring kippers, 856,000 pounds, and ground-fish fillets, 332,000 pounds.

CANNED FISH TRADE

Unsold Salmon Stocks about One and One-half Million Cases on September 30

In its first release this season the Association of Pacific Fisheries reports that on September 30 the unsold stocks of canned salmon in the hands of packers numbered 1,470,033 standard cases as compared with 1,624,243 cases a year ago. The figures represent the holdings of companies canning 99 percent of the pack in both years. Attention is called to the

fact that the pack of some individual companies as well as the total pack was not definitely known because some packing was still going on in certain localities.

Canned Salmon Unsold—Standard Cases

Item	September 30, 1941	September 30, 1940
Chinook or king	107,797	129,331
Puget Sound sockeye	38,002	49,552
Alaska red	146,360	465,923
Coho, silver, and medium red	1/ 11,421	232,929
Pink	1,050,931	651,478
Chum	103,399	86,557
Blueback	7,975	632
Steelhead	4,148	7,841
Total	1,470,033	1,624,243

1/ This does not include coho tails.

Puget Sound Salmon Pack has Large Percentage of Sockeyes

On October 4 the Puget Sound salmon pack was 311,000 standard cases, as compared with 285,000 on September 6, according to the Washington State Department of Fisheries. Packs on comparable dates in 1939 and 1937 were 362,000 cases and 422,000 cases, respectively.

Pink salmon formed half the pack, 152,000 cases, as compared with 270,000 cases in 1939, and 324,000 cases in 1937. Sockeye salmon made up most of the balance with 110,000 cases, almost double that in 1940 and in 1937 the last cycle year.

Alaska Salmon Pack Greatest since 1936

On September 27 the Alaska salmon pack amounted to 6,831,310 standard cases, according to the Service's preliminary figures. The final pack will not be much larger, including mainly chum and silver salmon packed during the fall season ending in October. The 1941 pack is the greatest since 1936, when 8,274,429 cases were packed to the corresponding date. The red salmon pack, 1,147,000 cases, is only about one-half that of recent years, except the poor cycle years of 1940 and 1935. The pink salmon pack surpassed all records with 4,620,000 cases, about 75,000 cases over the previous record in 1936. The pack of silver salmon, 339,000 cases, is 85 percent above the average pack during the 6-year period from 1935 to 1940. Chum salmon with 685,000 cases packed, is about 100,000 cases behind the 6-year average of 782,000 cases. The small king salmon pack, 40,000 cases, is about equal to the average since 1935.

Canned salmon prices remain well above last year as reported by the Service's Market News office in Seattle. Quotations below are f.o.b. Pacific Coast shipping points. Considerable difficulty is being experienced not only in shipping salmon from Alaska canneries to Seattle but also to Eastern markets by water transportation due to lack of space.

Canned Salmon Quotations—Per Dozen Cans

Variety	Can size	Oct. 1, 1941	Oct. 1, 1940
Chinook or king, Columbia River	1-lb. fancy flat	\$4.50	\$4.00
	$\frac{1}{2}$ -lb. fancy flat	2.60	2.25
Alaska red	1-lb. tall	3.35 - 3.40	2.45 - 2.50
	1-lb. flat	3.60	2.75
	$\frac{1}{2}$ -lb. flat	2.05 - 2.25	1.75
Coho and medium red	1-lb. tall	2.50	1.85 - 2.00
	1-lb. flat	3.00	2.10
	$\frac{1}{2}$ -lb. flat	1.75	1.20 - 1.30
Chum	1-lb. tall	1.70	1.25
	$\frac{1}{2}$ -lb. flat	1.10 - 1.15	.90
Pink	1-lb. tall	1.75	1.40
	1-lb. flat	1.90 - 2.00	1.50
	$\frac{1}{2}$ -lb. flat	1.20 - 1.25	.95
Puget Sound sockeye	1-lb. flat	4.00 - 4.50	3.50 - 3.65
	$\frac{1}{2}$ -lb. flat	2.50	2.10 - 2.25

Shrimp Pack Well Under Recent Years

The pack of shrimp from July 1 to September 27 in Gulf and South Atlantic canneries operating under the Seafood Inspection Service of the United States Food and Drug Administration was far behind the last two years on the latter date, according to totals compiled by the Service's New Orleans Market News office. Only 207,000 standard cases had been packed, compared with 361,000 cases for the same period in 1940, 504,000 cases in 1939, and the 5-year average of 489,672 cases. Early in October a shrimp cannery at Golden Meadow was destroyed by fire and it is reported 7,000 cases of shrimp were lost.

Canned Shrimp Prices—Per Dozen Tins

Size	Wet pack		Dry pack	
	October 1, 1941	October 1, 1940	October 1, 1941	October 1, 1940
Small	\$1.50 - \$1.70 few \$1.45	\$1.05 - \$1.15	\$1.55 - \$1.65 few \$1.45	\$1.05 - \$1.15
Medium	1.60 - 1.80 few 1.50	1.10 - 1.20	1.60 - 1.75 few 1.50	1.10 - 1.20
Large	1.65 - 1.95 few 1.60	1.15 - 1.25	1.70 - 1.90 few 1.60	1.15 - 1.25
Extra large or jumbo	1.75 - 2.00 few 1.65	1.20 - 1.30	1.75 - 2.00 few 1.65	1.20 - 1.30

A number of the shrimp packers reported on October 1 that they had not re-entered the market. Top quotations on October 1 were as much as 35 cents per dozen above those for September 1.

Packs of Tuna and Mackerel Decline

California canners packed 461,000 standard cases of tuna during August, according to information released by the California Division of Fish and Game. This was 148,000 cases or 24 percent less than was packed in the same month last year. The principal species canned during the month were: Yellowfin tuna, 144,000 cases; bonito, 100,000 cases; striped, 63,000 cases; and yellowtail, 58,000 cases.

The production of canned tuna in California during the first eight months of the current year amounted to 1,781,000 standard cases—a decline of 837,000 cases or 32 percent as compared with the same period in 1940. The pack by species during this period was as follows: Albacore, 21,000 cases; bonito, 174,000 cases; bluefin, 172,000 cases; striped tuna, 242,000 cases; yellowfin, 897,000 cases; yellowtail, 110,000 cases; tuna flakes, 131,000 cases; and tuna, tonno style, 34,000 cases.

The packs of all species except bonito and yellowtail declined during the first eight months of the current year as compared with the same period in 1940. The pack of yellowfin tuna, which decreased from 1,410,000 cases in the first eight months of 1940 to 897,000 cases this year, showed the greatest decline.

A total of 33,400 48-pound cases of mackerel was canned in California during August—30 percent less than was packed during the same month last year. The total pack of this species by California canners during the period from January through August of the current year totaled 253,000 cases as compared with 418,000 cases in the same period last year.

The production of canned sardines by California packers has been exceptionally heavy during the current season, which opened on August 1. According to estimates furnished by the California Sardine Products Institute, about 1,337,000 48-pound cases of sardines had been packed by October 3. During the months of August and September 1940, the pack of this species was greatly retarded by a price controversy between fishermen and canners, which resulted in only 48,000 cases of sardines being packed during the first two months of the season.

Large Pack of Maine Sardines Indicated

Data on the current season's pack of Maine sardines are not available; however, information on the domestic catch of sea herring, which are packed as sardines, and on imports of these fish, show that unusually large supplies have been available for canning during recent months. These data indicate that the current season's pack will be one of the largest in history. According to statistics released by the Maine Sea and Shore Fisheries Commission, 456,000 bushels of herring were landed at Maine ports during the first eight months of 1941, as compared with about 187,000 bushels during the same period last year. Imports of sea herring, which are used principally in the canning of Maine sardines, totaled 47,782,000 pounds during the first eight months of the current year, as compared with 11,198,000 pounds in the same period last year.

In 1940 the Maine pack of canned sardines totaled 1,118,000 standard cases of 25 pounds each. In that year a total of about 323,000 bushels of herring was landed in Maine, while imports of fresh herring amounted to 20,635,000 pounds.

British Columbia Salmon Pack Over 1½ Million Cases on September 27

British Columbia's salmon pack reached 1,517,000 standard cases on September 27, according to the Chief Supervisor of Fisheries in Vancouver. Packs on corresponding dates in 1940 and 1937, a cycle year, were 1,066,000 and 1,250,000 cases, respectively. With 453,000 cases the red or sockeye pack was about 100,000 cases above 1940 and 133,000 cases ahead of 1937. The pink pack of 420,000 cases was about double that in 1940 but almost 150,000 cases less than in 1937. The pack of silvers, 350,000 cases, also was nearly double that in 1940 and more than three times as large as that in 1937. The chum pack of 259,000 cases was about 30,000 cases under the previous year but somewhat above 1937. The chinook or king pack amounted to 34,000 cases.

FOREIGN FISHERY TRADE

Exports of Canned Sardines Show Increase

A total of 7,773,000 pounds of edible fishery products were exported from the United States during August—a decrease of 26 percent as compared with the same month last year. Since large shipments of unclassified canned fish have been exported during recent months it is not possible to make an exact comparison of the items sent to foreign countries during August 1941 and 1940. However, available data indicate that exports of salmon were far less than in August last year while those of canned sardines showed a marked increase.

United States Exports of Edible Fishery Products 1/

Item	August 1941	August 1940	Eight months ending with August	
			1941	1940
	Pounds	Pounds	Pounds	Pounds
Salmon, canned	253,000	7,548,000	14,007,000	40,766,000
Sardines, canned	4,225,000	1,835,000	40,384,000	48,301,000
Shrimp, canned	39,000	126,000	531,000	1,456,000
Other products	2/ 3,256,000	996,000	2/ 26,987,000	9,679,000
Total	7,773,000	10,505,000	81,909,000	100,202,000

1/ Data furnished by Bureau of Foreign and Domestic Commerce.

2/ This item is understood to consist largely of canned sardines.

Sea Herring Imports Continue Heavy

In August, as in the previous four months, sea herring led all other items in imports of edible fishery products into the United States. This species accounted for over one-third of the total poundage of these products received during the month. Other leading items imported during August were salted groundfish which accounted for 15 percent of the total; fresh or frozen fresh-water fish, 13 percent; and fresh or frozen salmon, 7 percent. Imports of all canned items for which data are available showed marked declines during August as compared with the same month last year. Receipts of canned tuna decreased 98 percent; canned sardines, 87 percent; canned crab meat, 87 percent; and canned lobsters, 40 percent.

Total imports of edible fishery products during the first eight months of 1941 totaled 201,655,000 pounds—an increase of 3 percent as compared with the same period last year. Receipts of fresh or frozen sea herring, which are used principally in the canning of sardines in Maine, have been unusually large during the current year. Imports of this species during the first eight months of 1941 amounted to 47,782,000 pounds, 327 percent more than was received during the same period in 1940.

Fresh lobster was the only other important item showing a large gain in imports during the current year; however, a number of items showed marked declines. During the first eight months of this year receipts of frozen tuna were 62 percent less than the amount imported during the same period last year, while receipts of canned crab meat were down 53 percent, canned sardines 47 percent, and canned tuna 51 percent.

Imports of Edible Fishery Products into the United States

Item	August 1941	August 1940	Eight months ending with August	
			1941	1940
	Pounds	Pounds	Pounds	Pounds
Fresh or frozen:				
Fresh-water fish	3,628,000	3,405,000	33,975,000	34,401,000
Halibut	343,000	188,000	4,068,000	3,940,000
Salmon	2,101,000	757,000	7,599,000	4,685,000

Imports of Edible Fishery Products into the United States (Continued)

Item	August 1941	August 1940	Eight months ending with August	
			1941	1940
Fresh or frozen (continued):	Pounds	Pounds	Pounds	Pounds
Sea herring	10,467,000	4,028,000	47,782,000	11,198,000
Swordfish and sturgeon	816,000	1,296,000	1,149,000	2,338,000
Tuna	729,000	670,000	1,952,000	5,111,000
Fish filleted, skinned, boned, etc.	1,670,000	950,000	8,485,000	10,458,000
Smelts	—	—	4,441,000	4,100,000
Lobsters	1,316,000	949,000	15,453,000	13,865,000
Pickled or salted:				
Cod, haddock, hake, etc.	4,235,000	6,156,000	23,041,000	29,560,000
Herring	118,000	276,000	13,602,000	17,747,000
Canned:				
Crab meat	87,000	680,000	5,096,000	10,787,000
Lobsters	161,000	270,000	1,379,000	1,068,000
Sardines	136,000	1,041,000	4,925,000	9,310,000
Tuna	14,000	684,000	2,718,000	5,562,000
Other fresh, frozen, salted, canned, etc.	2,372,000	1,381,000	34,990,000	31,391,000
Total	28,193,000	22,731,000	201,655,000	195,521,000

THE COVER PAGE

Although the annual catch of menhaden exceeds that of any other fishery product taken off the east coast of the United States, comparatively few people are familiar with the species since nearly the entire production is used in the manufacture of meal, scrap, and oil. In 1939, the catch of menhaden, which amounted to 575,480,000 pounds, accounted for 13 percent of the total volume of fishery products taken in the United States and Alaska. In that year only the pilchard, which is taken off the Pacific Coast States, was taken in greater volume.

The menhaden belongs to the herring family (Clupeidae) and is found from Nova Scotia to Brazil. While they are not commonly eaten, their high oil content makes them a valuable species for use in the production of fish meal and oil.

Data for 1940 show that in that year 30 plants on the east coast and the Gulf of Mexico were engaged in the production of menhaden byproducts. These factories were located as follows: 1 in New York, 2 in New Jersey, 2 in Delaware, 9 in Virginia, 10 in North Carolina, 1 in Georgia, 4 in Florida, and 1 in Mississippi. Manufactured menhaden products produced during the year were valued at \$3,999,482. These consisted of dry scrap, 47,354 tons, valued at \$2,008,681; meal, 8,895 tons, valued at \$414,548; acidulated scrap, 15,520 tons, valued at \$271,533; and oil, 5,773,919 gallons, valued at \$1,304,720.

Menhaden are usually found in great compact schools, which is characteristic of the family Clupeidae, and it is possible to take them in large quantities through the use of purse seines. Nearly the entire catch is taken by this gear. The cover page for this month shows the crew of a menhaden purse seiner brailing a catch of the fish into the vessel which will transport the fish to a menhaden factory. In 1939 about 120 vessels operated purse seines in the menhaden fishery.

FISHERY TRADE INDICATORS
(Expressed in Thousands of Pounds)

Item	Month	Latest month	Same month a year ago	Previous month
FRESH FISH LANDINGS				
Boston, Mass.	August	25,129	27,624	27,315
Gloucester, Mass.	do	18,197	12,790	13,520
Portland, Maine.....	do	2,503	4,433	2,447
Boston, Gloucester, and Portland:				
Cod.....	do	3,112	5,987	4,777
Haddock.....	do	14,777	13,414	14,456
Pollock.....	do	743	943	685
Rosefish.....	do	14,922	8,856	12,879
Pacific Coast:				
Halibut, North Pacific ports.....	do	6,814	5,282	7,475
Halibut, Seattle.....	do	2,939	2,086	3,041
FISH RECEIPTS, CHICAGO 1/				
Salt-water fish.....	do	1,910	1,565	2,104
Fresh-water fish.....	do	2,034	1,684	2,228
Shellfish, etc.	do	442	391	600
By truck.....	do	1,990	1,366	2,206
By express.....	do	1,507	1,760	1,636
By freight.....	do	889	513	1,091
COLD-STORAGE HOLDINGS 2/				
New York, N. Y.:				
Salt-water fish.....	September	4,885	3,895	4,269
Fresh-water fish.....	do	1,717	2,392	1,485
Shellfish, etc.	do	1,264	1,365	1,195
Boston, Mass.:				
Salt-water fish.....	do	14,896	14,385	13,123
Fresh-water fish.....	do	35	42	36
Shellfish, etc.	do	945	1,133	809
Chicago, Ill.:				
Salt-water fish.....	do	1,805	1,381	1,610
Fresh-water fish.....	do	1,631	1,296	1,673
Shellfish, etc.	do	525	531	503
Unclassified.....	do	203	264	185
United States:				
Cod fillets.....	do	2,420	1,721	2,616
Haddock fillets.....	do	11,195	7,933	8,630
Halibut.....	do	16,027	14,451	14,156
Mackerel.....	do	4,982	8,939	4,313
Pollock fillets.....	do	235	345	372
Rosefish fillets.....	do	4,889	2,079	4,631
Salmon.....	do	8,233	8,795	4,938
Whiting.....	do	14,443	10,843	13,534
Shrimp.....	do	1,744	2,085	1,483
New England, all species.....	do	30,639	28,931	26,660
Middle Atlantic, all species.....	do	18,164	12,681	16,976
South Atlantic, all species.....	do	6,679	3,912	6,432
North Central East, all species.....	do	12,451	10,867	10,511
North Central West, all species.....	do	4,432	2,544	3,719
South Central, all species.....	do	2,991	2,067	2,204
Pacific, all species.....	do	26,826	25,319	22,103
FOREIGN FISHERY TRADE 3/				
Exports:				
All edible fishery commodities.....	August	7,773	10,505	17,819
Canned salmon.....	do	253	7,548	127
Canned sardines.....	do	4,225	1,835	6,400
Canned shrimp.....	do	39	126	44
Imports:				
All edible fishery commodities.....	do	28,193	22,731	26,810
Fresh-water fish and eels, fresh or frozen....	do	3,628	3,405	2,819
Canned tuna.....	do	14	684	991
Canned sardines.....	do	136	1,041	332
Cod, haddock, hake, etc., pickled or salted...	do	4,235	6,156	3,969
Herring, pickled or salted.....	do	118	276	154
Crab meat, sauce, etc.....	do	87	580	1,876
Lobsters, not canned.....	do	1,316	949	2,107
Lobsters, canned.....	do	161	270	254

1/ Includes all arrivals as reported by express and rail terminals, and truck receipts as reported by wholesale dealers including smokers.

2/ Data for individual cities are as of the last Thursday of the month, except those at Boston which are for the last Wednesday of the month, and those for geographical areas and the total of the United States which are as of the 15th of the month.

3/ From data compiled by the Bureau of Foreign and Domestic Commerce.

Note.—Data for the latest month are subject to revision.

NATURAL HISTORY AND METHOD OF CONTROLLING THE STARFISH

BULLETIN NO. 31

Direct damages by starfish, combined with the expense of protecting oyster beds from the depredations of this natural enemy, cost oyster growers of the State of Connecticut alone half a million dollars annually, according to a Bureau of Fisheries survey of the distribution of starfish and their effect on the oyster industry of Long Island Sound.

In its Bulletin No. 31, "Natural History and Method of Controlling the Starfish," by Paul S. Galtsoff and Victor L. Loosanoff, the Bureau provides the oyster industry with definite information on the areas of starfish concentration in the Sound and discusses the various methods of starfish control. Of particular interest, because of its demonstrated effectiveness and harmlessness to oysters, is the use of quicklime, which has been tested recently by the Bureau. Effective application of control measures, the Bureau's investigators conclude, depends upon organized efforts of individual oystermen and State conservation departments to clean out the centers of propagation from which starfish are continually spreading to cultivated bottoms. Control measures should be applied during the spring months, before the starfish have begun to appear.

The 57-page report may be obtained for twenty cents from the Superintendent of Documents, Government Printing Office, Washington, D. C., by requesting Bureau of Fisheries Bulletin No. 31.

